What is Claimed is:

1. A method for forming a device isolation film, comprising the steps of:

(a) sequentially forming a pad oxide film and a pad nitride film on a semiconductor substrate;

(b) selectively etching the pad nitride film to form a nitride film pattern;

(c) etching the pad oxide film and a predetermined thickness of the semiconductor substrate using the nitride film pattern as a hard mask to form a trench;

(d) forming a thermal oxide film on the surface of the trench;

(e) performing an annealing process under NH_3 atmosphere to form an oxide nitride film on the surface of the thermal oxide film;

(f) forming a liner nitride film on the entire surface;

(g) forming an oxide film filling the trench on the entire surface; and

(h) performing a planarization process.

2. The method according to claim 1, wherein the step (e) comprises a plasma NH_3 nitridation or a thermal

NH_3 nitridation.

3. The method according to claim 1, wherein the step (e) is performed at a temperature ranging from 600 to 900°C.

4. The method according to claim 1, wherein the step (e) is performed at a pressure ranging from 5 mTorr to 200 Torr.

5. The method according to claim 1, wherein the steps (e) and (f) are performed under in-situ, in-chamber or cluster condition.

6. The method according to claim 1, wherein the step (f) is performed in a LPCVD furnace or a LPCVD single chamber.

7. The method according to claim 6, wherein the step (f) is performed at a temperature ranging from 600 to 900°C.

8. The method according to claim 6, wherein the step (f) is performed at a pressure ranging from 0.1 to 10

Torr.

9. The method according to claim 6, wherein the step (f) is performed using one or more gases selected from the group consisting of SiH_4, $SiCl_4$ and SiH_2Cl_2 as silicon source gases, and using one or more gases selected from the group consisting of NH_3 and N_2 as nitrogen source gases.

10. The method according to claim 9, wherein the supply ratio of nitrogen source gas to silicon source gas is 1 : 1 ~ 20 : 1.

11. The method according to claim 1, wherein the step (f) further comprises the step of forming a thermal oxide film on a liner nitride film and performing an annealing process.

12. A semiconductor device fabricated by the method of Claim 1.